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Coopetition as a model of cooperation in the Polish National Competence Center

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Abstract

Coopetition is a strategy of cooperation between competing entities, with the primary goal of jointly creating value. The positive effects of coopetition may relate to costs, risks, economies of scale, research and development activities, as well as access to external knowledge and resources. Coopetition supports increased competitive advantage because it enables the creation of products and services that partners could not develop independently.

The Polish National Competence Center (NCC) operates based on five independent supercomputing centers. This article presents the results of research confirming that the established collaboration is characterized by coopetition. The centers cooperate within the EuroCC project to form the Polish NCC, supporting one another in achieving the project's goals. The cooperation meets three primary conditions of coopetition: mutual dependence, mutual interests, and mutual benefits. It brings specific advantages such as increased innovation, shared competencies and resources, and enhanced competitiveness in the Polish market through joint marketing and training activities.

Keywords:

NCC, Coopetition, Supercomputer Center

1. Characteristics of coopetition

Coopetition is a relationship that combines cooperation and competition. It is understood as a win-win strategy adopted by competing firms to achieve common goals [1]. Two or more partners involved in the coopetition process decide on a mutually beneficial exchange to add value for all of them [2]. Motivating factors that trigger organizations to start the coopetition process are [3]:

- Common dependence – partners need to be convinced they need each other to complete their goals,
- Common interests – common fields of collaboration need to be clear, and
- Common benefits – partners are convinced that the relationship will benefit all of them.

These are at the same time the main assumptions of coopetition. Supportive leadership, the development of trust between coopetitors, long-term relationships and commitment, conflict management, knowledge and risk sharing, organizational learning, and efficient information flow are identified as key elements of coopetition [4, 5]. Reciprocity between partners and the overall strategic fit between them can also be added to this list [6]. The specific aims of establishing this kind of interorganizational relationship can be [1]:

- Gaining market power – by sharing resources and know-how, it is possible to create greater business value and gain access to a larger or new market,
- Creating innovation – sharing knowledge allows companies to generate new knowledge and new products,
- Supply chain connections – collaboration brings benefits in logistics or supply chain security,
- Global competition – networks and alliances help improve competitive position.

Some very important motives for choosing a coopetition strategy include sharing the costs and risks of entering new markets, engaging in large initiatives, or when parties believe such a strategy will be beneficial for market performance [7].

The main disadvantages of coopetition result from the fact that competition is an element of this strategy. Opportunistic behaviors [4] based on self-interest maximization can be a challenge and may lead to coopetitors breaking the rules of business collaboration or cause asymmetry of power or benefits and a lack of trust. The effectiveness of coopetition can also be reduced by conflicts or the loss of partners' decision-making and organizational independence.

Depending on different factors, several types of coopetition have been identified [8]. These may be dyadic (two partners) or network (more than two partners), vertical (partners linked in a vertical value chain) or horizontal (partners at the same stage in the industry value chain). Moon and others [9] distinguish two types of coopetition: traditional, where the partners represent the same type of industry, and hyper-coopetition, including companies from different industries collaborating to compete with others from the same sector. Regardless of the type of coopetition, the principles and motives of co-creating value for cooperating organizations are similar and often refer to high technology.

2. Coopetition in hi-tech organizations

Very fast business dynamics and a high level of uncertainty encourage the search for strategies that allow optimal use of resources and meet the needs of constantly changing markets [7]. Innovation and technology are the foundation of competitive advantage, but they also require significant financial investment, development of know-how, and entail long-term risks. Coopetition seems to be the best choice for knowledge-intensive and R&D sectors. High-tech organizations operating under conditions of intense competition, networked relationships, product and service heterogeneity, and high specialization of technical resources provide an excellent environment for the development of coopetition relationships [10, 11].

The circumstances that encourage hi-tech organizations to try coopetition include the pressure for constant innovation and short technology life cycles [9]. The main motives for joining coopetition partnerships for hi-tech and R&D organizations are the reduction of technology development risk, the possibility to access grants, sharing resources between partners, and the expectation of creating added value [8]. An important factor motivating hi-tech organizations to collaborate with competitors is also their service orientation. This allows them to share knowledge regarding innovation trends, which is extremely important when customer behaviors are constantly changing and unpredictable. Service coopetition supports understanding clients' needs, delivering better quality services, and sharing the risk of marketing activities [12]. Coopetition is even called a technology-driven strategy and is often used in the hi-tech sector [6].

In the context of quantum computing, another reason for implementing coopetition has been mentioned. The limited talent pool and lack of quantum experts needed to develop new quantum algorithms and service clients is an important challenge for this sector [13]. Other reasons include the need for diversified knowledge to attract clients and meet their needs, as well as the

necessity of sharing proprietary data and information. Finally, due to low user awareness and lack of experience in promoting the business impact of quantum practices to convince clients they can get a return on technology investment, there is a need to establish consortia and centers of excellence, joining the capital of quantum suppliers. The coopetition strategy is recommended to address these obstacles and challenges.

This can be easily related to the situation in the field of HPC. Here, too, there is a limited number of experts, low customer awareness, and the necessity of substantial technological and marketing investments.

The Polish National Competence Centre in HPC operates as an inter-university organization within the EuroCC framework. HPC experts representing six different supercomputing centers in Poland, competing in the provision of services, collaborate to fulfill the NCC's aim: "to enable access to world-class supercomputers and provide technological and training support in the field of high-performance computing, as well as the collection, storage, processing, and analysis of large amounts of data, including artificial intelligence." [https://cc.eurohpc.pl/index.php/en/the-national-competence-centre-in-hpc/]. Sharing human capital, common technology awareness, promotional activities, and user training organization are examples of coopetitive efforts. Table 1 presents the main areas of competition and the potential areas of cooperation among the centers involved in the establishment of the Polish NCC.

Table 1: Areas of competition and collaboration among Polish NCC partners The coopetition started in 2020 and is planned to continue until the end of 2025 (the end of EuroCC 2), but it is also assumed that the project will be sustained for the following years after its official completion.

Areas of competition	Areas of collaboration
▸ access to HPC infrastructure, ▸ services (e.g. cloud services, data archiving, repositories), ▸ enabling remote access to HPC resources, ▸ serving a similar client group.	▸ building awareness of HPC in Poland, ▸ joint promotional activities, ▸ user training, ▸ development of HPC talent, ▸ joint investments in infrastructure.

3. Assessment of Polish NCC coopetition - survey results

The research aim was to investigate the perception and assessment of the collaboration model in the Polish NCC by project participants from all six supercomputing centers. The survey was conducted in 2024 and covered almost all employees of the Polish NCC (10 out of 11 people).

The research tool was a questionnaire that included six closed questions. Five of them had three possible answers: yes, no, and difficult to say. The last one included several options to choose from. The questions explored respondents' views on the collaboration model, as well as possible risks and benefits resulting from the Polish NCC coopetition.

Members of the Polish NCC were asked if the collaboration between the five supercomputing centers meets the main assumptions of coopetition. Most of them recognized a common interest and the potential to gain mutual benefits (although one participant still found this unclear). Their answers concerning mutual dependence were much more cautious, and more than 60% of partners expressed some doubts (Figure 1).

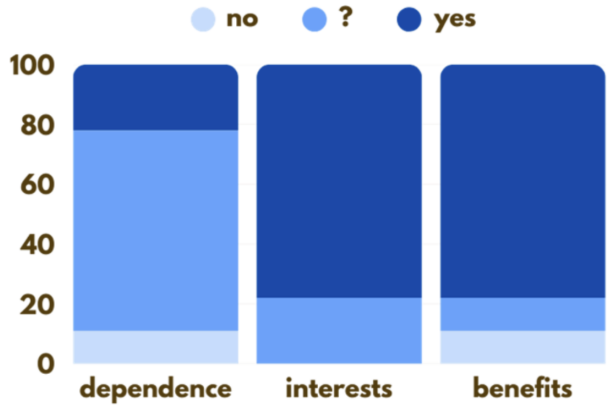

Figure 1: Main features of Polish NCC cooperation model

The main factors that, in participants' perception, enabled the creation of a consortium of five independent centers were:

- The mutual reputation of partners based on high employee competencies (100% "yes" answers),
- Good relationships resulting from experience in implementing previous projects together (100% "yes" answers),
- The EuroCC project framework, where tasks are divided between individual centers (one respondent raised concerns),

- A high level of trust between partners (one respondent raised concerns).

The results confirm that members of the Polish NCC were ready to build the consortium and collaborate according to the rules of competition.

The coopetition model is connected with certain risks, and all respondents were aware of them (the statement "I see no risk" was not selected by any participant). The main risks identified by most members of the project were potential competition and power imbalances. Other widely recognized concerns included divergence of goals, unequal division of profits, and diffusion of responsibility (Figure 2).

Figure 2: Risks of NCC's coopetition (Yes answers)

Other possible responses (More competition than collaboration, Conflicts, Too strong dependency between the centers, Potential loss of competitive advantages in the future) were not selected by any of the respondents.

A positive attitude toward the Polish NCC coopetition was also visible in the answers to the question: What do you consider to be the important values resulting from cooperation between Polish HPC centers (Figure 3)?

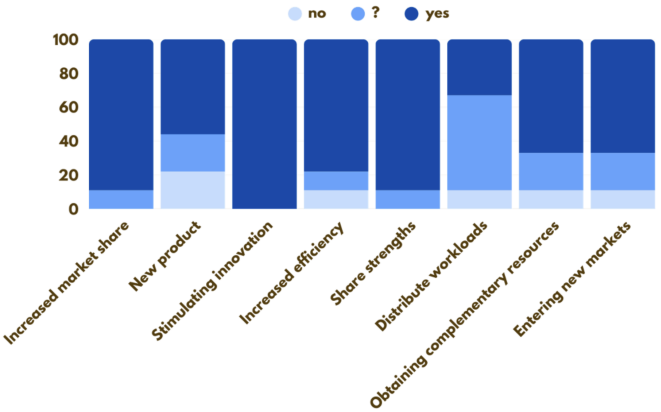

Figure 3: Values resulting from NCC's coopetition

All respondents agreed that coopetition can foster innovation because the NCC provides a platform for sharing ideas and harnessing the diverse competencies of all participants. Sharing the strengths of all project participants, combining resources, and promoting HPC across Poland allows access to a larger portion of the market (nine "yes" answers). At the same time, entering new markets seemed less clear to the participants. Slightly more doubts were related to the possibility of creating new products and distributing the workload. One reason for this may be that the EuroCC2 project is not focused on developing new technologies. It is worth noting that most of the "no" responses came from the same participant.

Cooperation between Polish HPC centers within the NCC leads to increased competitiveness in the Polish market. There are at least five main tools used to achieve this goal:

- Joint marketing activities aimed at building awareness of HPC resources in Poland,
- Promotion of the implemented project portfolio and best practices, highlighting the benefits of HPC use for scientific and business clients,
- Jointly offering diverse services based on the specialties of each supercomputing center,
- Joint organization of training sessions and workshops, supra-regional promotion,
- Creating a map of HPC services, offering solutions tailored to local customer needs while using the social and technological capital of cooperating centers.

The study confirmed the importance of each of these tools according to the respondents' perceptions (Figure 4).

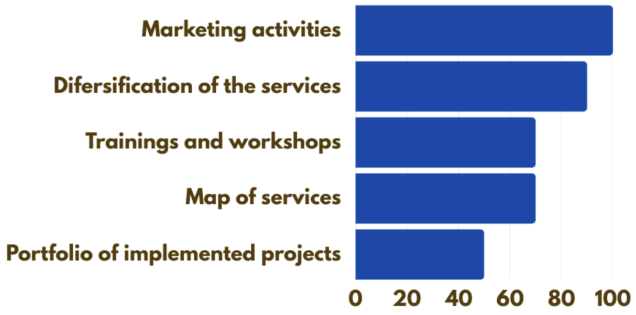

Figure 4: Tools increasing competitiveness of NCC (Yes answers)

Marketing activities were appreciated by all respondents. Most of them valued the diversification of the services offered. The portfolio of implemented projects, including best practices highlighting the benefits of HPC for scientific and business clients, was recognized as an important tool by only 50% of NCC members.

4. Conclusions

Coopetition seems to be a perfect strategy for developing the Polish National Competence Centre in HPC. It allows the combination of human and technological capital from six major Polish supercomputing centers to achieve the goals of the EuroCC project. The members of the Polish NCC understand the principles of coopetition well and appreciate the benefits related to this type of collaboration. This is not an uncritical assessment. Research participants also recognize the potential risks of coopetition, and there is still at least one person who questions the value of the NCC's coopetition. Nevertheless, the results of the survey confirm the presence of coopetition and its potential advantages.

Building trust and monitoring the benefits of coopetition seem to be ongoing tasks in the development of the Polish NCC. The ability to continue the project's mission and ensure its sustainability appears possible thanks to the know-how and best practices developed during the period of competition.

A positive effect of coopetition within the NCC is the implementation of joint activities dedicated to the project's stakeholders, which involved more than 200 unique representatives of SMEs, around 100 representatives of large companies, and approximately 80 participants from universities and public institutions. Examples of best coopetition practices include:

- a LinkedIn profile: `https://www.linkedin.com/company/eurocc-poland/posts/?feedView=all`, where activities delivered by each partner and by the NCC are promoted,
- a shared services catalogue available to the international HPC community, and
- co-organized workshops or joint booths at trade fairs.

Additionally, a decision was made to continue cooperation within the Polish NCC in the same composition in the next edition of the project in the years 2026–2028.

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References

[1] R. B. Bouncken, J. Gast, S. Kraus, and M. Bogers, "Coopetition: a systematic review, synthesis, and future research directions," *Review of Managerial Science*, vol. 9, pp. 577–601, 2015.

[2] A. Meena, S. Dhir, and S. Sushil, "A review of coopetition and future research agenda," *Journal of Business & Industrial Marketing*, vol. 38, no. 1, pp. 118–136, 2023.

[3] J. Kreft and K. Leja, *Koopetycja w trzech odsłonach.* Gdańsk: Politechnika Gdańska, 2020.

[4] J. Cygler and W. Sroka, "Coopetition disadvantages: the case of the high tech companies," *Inzinerine Ekonomika–Engineering Economics*, vol. 28, no. 5, pp. 494–504, 2017.

[5] W. Mierzejewska, "Czynniki sukcesu koopetycji," *Journal of Management and Finance*, vol. 16, no. 1/1, 2018.

[6] P. Klimas, W. Czakon, and V. Fredrich, "Strategy frames in coopetition: An examination of coopetition entry factors in high-tech firms," *European Management Journal*, vol. 40, no. 2, pp. 258–272, 2022.

[7] P. Ritala, "Coopetition strategy – when is it successful?," *British Journal of Management*, vol. 23, pp. 307–324, 2012.

[8] A. Nemeh and S. Yami, "The determinants of the emergence of coopetition strategy in r&d," *International Studies of Management & Organization*, vol. 46, no. 2-3, pp. 159–178, 2016.

[9] S. Y. Moon and C. Park, "From coopetition to hyper-coopetition: Focusing on a new paradigm of heterogeneous organizational relationship in the high-tech industry.," *Sustainability*, vol. 14, no. 1, 2022.

[10] S. Y. Yoon, S. J. Jee, and S. Y. Sohn, "Mapping and identifying technological coopetition: a multi-level approach," *Scientometrics*, vol. 126, no. 7, pp. 5797–5817, 2021.

[11] A. Zakrzeska-Bielawska, *Koopetycja w rozwoju przedsiębiorstw high-tech: determinanty i dynamika.* Warszawa: Wydawnictwo PLACET, 2014.

[12] M.-C. Wang and J.-S. Chen, "Driving coopetition strategy to service innovation: the moderating role of coopetition recognition," *Review of Managerial Science*, vol. 16, no. 5, pp. 1471–1501, 2022.

[13] S. Gunashekar, C. d'Angelo, I. Flanagan, D. Motsi-Omoijiade, M. Virdee, and C. Feijao, "Using quantum computers and simulators in the life sciences," 2022.